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The Institute of Life Cycle Assessment, Japan (ILCAJ) was established in October 2004. The goal of ILCAJ is to promote academic activities related to life-cycle thinking and to share expert knowledge with colleagues from wide-ranging backgrounds. Professor Ryoichi Yamamoto, University of Tokyo, has taken responsibility as Chairman of ILCAJ.

In April 2005, ILCAJ has successfully established its publication organ (in Japanese), The Journal of Life Cycle Assessment, Japan (J LCA Jpn). The issues appear every three months. J LCA Jpn publishes peer-reviewed research articles, commentaries & discussions, (technical) reports, lecture notes, and presentations of research groups in Japan, among other.In Int J LCA 12 (6) 348–350, we were happy to announce the collaboration between Int J LCA and J LCA Jpn for the purpose of exchanging knowledge, new insights, experiences and information across the different languages. The **Corner: JLCA Jpn** aims to be a bridge between the LCA community of Japan and of the entire world.

All abstracts of **research articles** as well as **commentaries & discussions** published in J LCA Jpn will simultaneously appear in Int J LCA, Corner: JLCA Jpn, in order to introduce Japanese activities to our readers. In addition, some selected research papers from J LCA Jpn will be submitted to Int J LCA for publication following peer-review. We hope that this collaboration will stimulate the global exchange of information through professional pathways.

The following abstracts were published in J LCA Jpn Vol. 3, No. 4.

Research Article

LCA of Garbage Disposal for Household Use by Interregional Waste Input-output Analysis

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Objective. As the waste issue is a site-dependent problem, it is important to examine that the policy of a municipality will affect to the whole society. In this study, we proposed the evaluation method of a municipal policy by using interregional waste input-output (IR-WIO) analysis. As a case example, we chose the LCA of garbage disposal for household use. We assumed that garbage disposals were used in households in Tokyo, and examined the effect for the economic activities and the environmental loads to Tokyo and other regions.

Results and Discussion. In this study, we assumed scenarios of the penetration rate of garbage disposal for household use and the usage of the generated compost. The penetration rate of garbage disposals for household use was assumed to be 1.5% and 5% to 100% at 5% intervals. The generated compost was assumed to be used in households or discarded as general waste. We analyzed the effect of the garbage disposal for household use to the environmental loads and the economy by using the IR-WIO table in Tokyo in 1995. In Tokyo, we found that CO_2 emissions from the waste treatment sectors were considerably reduced. The amount of the reduction was three times larger than that of the increase of CO_2 emissions seen for the production activities of the garbage disposal for household use. In the other regions, however, the increase of CO_2 emissions by the production activities was much larger than the reduction of CO_2 emissions in Tokyo, which caused the increase in CO_2 emissions for the whole society. The economic effects in all scenarios were almost proportional to the penetration rate of garbage disposals for household use in both regions. The degree of this effect amounts to about 141 billion yen when the penetration rate is assumed to be 100%, that was 2.90×10^2% for all economic activities. The relation of the penetration rate and the amount of CO_2 emissions was almost linear except for some specific intervals. The reason for this non-linearity was that the characteristics of the waste and the methods of the waste treatment sometimes changed according to the amount of waste.

Conclusions. If the compost generated by the garbage disposal was used in households, our computational results showed that the environmental loads decreased in Tokyo, but increased in the other regions which caused, in total, an increase of CO_2 emission for the whole society. However, if the compost generated by the garbage disposal was emitted as general wastes, the environmental loads were rather high. We found that our assumed policy makes positive beneficial effects on the economic activities and the reduction of waste for the whole society.

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Research Article

Investigation on Reducing the Environmental Load of Home Laundry Drying

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Objective. Sales of household machines combining both washing and drying functions have increased rapidly in recent years due to an increasing number of women working, an increasing number of single-person households, and the appeal of these machines in terms of reducing the burden of housework. However, it was described in the previous paper that these machines have been criticized for their high power consumption when used for drying, leading to significant environmental load. On the other hand, life cycle product assessment (ISO-LCA) has in the past only been used to assess a systems environmental performance. Social LCA methods that incorporate economic considerations will also prove useful in terms of sustainable consumption. Thus, we began a social, LCA-based evaluation, combining environmental and cost performance in assessing the drying process of household washer-dryer units. In this study, we examined ways to reduce environmental and economic effects by applying social LCA to the entire life cycle, including clothing-related factors, by comparing the new type of washer-dryer incorporating a heat-pump unit with a traditional type of washer-dryer and separate gas dryer.

Results and Discussion. Of all life cycle stages, the LCI-based study indicated that levels of CO_2 emissions are highest during the stage involving the product process of clothes. In addition, CO_2 emissions during machine use are much higher than CO_2 emissions during the actual manufacture of either type of washing machine. Including the drying process in the measurements increased the CO_2 emissions of the conventional washer-dryers and heat-pump washer-dryers increased these emissions 2.5-fold and 2-fold, respectively. The LCC-based study showed that heat-pump washer-dryers offer lower total costs than conventional washer-dryers for the overall laundry process over their entire life cycle. Damage to clothing during the drying process of the conventional washer-dryers increased the overall costs.

Conclusions. The social LCA results indicated that CO_2 emissions were higher for machine usage than for manufacture, for all types of washer-dryer. The results also showed that greater damage to clothing was caused during the drying process compared to washing alone, and the drying process also greatly increased overall CO_2 emissions. The study also showed that heat-pump washer-dryers with short, low-temperature drying cycles were effective in reducing CO_2 emissions by approximately half due to their lower energy consumption and mechanical power compared to conventional washer-dryers. The LCC results showed that using heat-pump washer-dryers for both washing and drying reduced costs compared to conventional washer-dryer or gas dryers. This study revealed that heat-pump washer-dryers offered environmental and economic benefits when used both to wash and to dry clothes.

Research Article

Estimation of Energy Consumption and Environmental Impact Reduction by Introducing Sustainable Agriculture to Rice Paddy Field Cultivation

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Objective. Public interests on introducing sustainable agriculture have recently been increasing especially in Shiga prefecture Japan, where the green payments program for certified eco-farmers started in 2004. It is essential to introduce a comparable method so that we can evaluate an environmental improvement brought by the alternative practices. In this study, we compare the environmental impact induced by conventional and by sustainable rice paddy field cultivation that reduces the use of fertilizer and water consumption while yields are constant. The inventory analysis is applied throughout the cultivation process and the fertilizer production process for nitrogen, phosphorus, energy consumption, carbon dioxide, methane and nitrous oxide. Furthermore, we specified those substances in eutrophication of water system impact, global warming potential and energy consumption indices. By each of the specified indices, environmental impacts of both agricultures are evaluated quantitatively.

Results and Discussion. It is estimated that sustainable agriculture reduces nitrogen leaching into the water system by 77% compared to conventional agriculture. Energy consumption of conventional agriculture is derived from farming processes (36%), fertilizer production (46%) and agrochemical production (18%). As a result, it is clarified that a large part of energy consumption in rice paddy field cultivation results from fertilizer and agrochemical production processes. Therefore, the reduction of agrochemical and fertilizer application is effective in decreasing energy consumption. As for global warming potential, methane contributes 57% of total emission, carbon dioxide 30%, and nitrous oxide 13% in cases of conventional agriculture. Methane has the highest percentage of global warming potential in both conventional and sustainable agriculture, therefore, farming systems which reduce methane emission are the most important issue for rice paddy field cultivation. Lastly, sustainable agriculture reduces energy consumption, eutrophication potential and global warming potential by 79%, 79% and 88%, respectively, compared to conventional agriculture.

Conclusions. The result clearly shows that introduction of sustainable agriculture which adopts water conservation method and uses less fertilizer can mitigate not only eutrophication potential of water systems but also global warming potential and energy consumption, while the yield is constant. The result indicates that sustainable agriculture is preferable from the viewpoint of environmental impacts with disregard to production costs.